



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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DEQ
Planning Division

Ref: 8EPR-EP

Mr. Art Compton, Director
Planning, Prevention and Assistance Division
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: TMDL Approvals
Ruby River Watershed

Dear Mr. Compton:

We have completed our review of the total maximum daily loads (TMDLs) as submitted by your office for the Ruby River Watershed TMDL. The TMDLs are included in the document entitled Ruby River Watershed Total Maximum Daily Loads and Framework for a Water Quality Restoration Plan – December 2006. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the TMDLs as developed for the Ruby River TPA. Enclosure 1 to this letter provides a summary of the elements of the TMDLs and Enclosure 2 provides details of our review of the TMDLs.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving this TMDL, EPA affirms that the TMDLs have been established at a level necessary to attain and maintain the applicable water quality standards and have the necessary components of an approvable TMDL.

EPA has been in contact with the United States Fish and Wildlife Service (FWS) regarding whether and, if so, how the EPA's approval of the Ruby River Watershed TMDLs may affect the continued existence of any endangered or threatened species listed under the Endangered Species Act (ESA) or the designated critical habitat of any such species. EPA has not determined that today's approval may have such an affect. Therefore, consistent with the terms of a consent decree in the lawsuit of Friends of the Wild Swan, et al., v. U.S. Environmental Protection Agency, et al., Civil Action No. CV99-87-M-LBE, United States District Court for the District of Montana, Missoula Division, EPA has decided to approve these TMDLs contingent upon the outcome of consultation with the FWS.

Thank you for your submittal. If you have any questions concerning this approval, feel free to contact Ron Steg of my staff at (406) 457-5024.

Sincerely,

Quiana Wong

for

Carol Rushin
Assistant Regional Administrator
Ecosystems Protection and Remediation

Enclosures (2)

cc:

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APPROVED TMDLS
Ruby Watershed Planning Area

27 TMDLs completed
 7 Determinations made that no TMDL was needed
 6 TMDLs not completed at this time

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
Alder Creek MT41C002_040	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 20 to 38% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 6 or 8% depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 - 29.8 depending on Rosgen Stream type. (Table 5-4. p. 73)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 31% reduction in total load. (Table 7-7 p205)	WLA = a performance-based allocation is used for a small industrial storm water source. Follow the NPDES permit requirements. LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing, 25% reduction from historic mining activities, 50% reduction from past riparian vegetation clearing for agricultural fields. (Table 7-7 p205) PLUS An adaptive management plan for assessing future sources. (p 279)	"Ruby River Watershed TMDLs and Framework for a Water Quality Restoration Plan" MT DEQ (August 2006)
	Copper ²	Copper chronic aquatic life standard. Sediment criteria. Aquatic Life toxic response. (Section 4.1.1 p 38)	Error in listing. (p 67)	NA	"
	Mercury ²	Mercury Fish Tissue Guidance from MT DPHHS. Mercury sediment threshold.	Postponed until fish tissue source (aerial deposition and historic mining) pathways are better understood.	NA	"
Basin Cr.	Siltation ¹	Riffle % surface fines < 6 mm ≤ 20	Sum of the allocations	WLA = 0 LA = 51% reduction in loading from	

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
MT41C003_120	(and habitat alterations)	to 44% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 7$ or 8% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating $\leq 23.4 - 29.8$ depending on Rosgen Stream type. (Table 5-6. p. 76)	to the known human-caused sediment sources + natural sources. This equates to an 8% reduction in total load. (Table 7-8 p.206)	human-caused bank erosion. (Table 7-8 p.206) PLUS An adaptive management plan for assessing future sources. (p 279)	"
Burnt Creek MT41C003_130	Siltation ¹ (and habitat alterations)	Riffle % surface fines $< 6 \text{ mm} \leq 20$ to 44% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 7$ or 8% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 2.5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating $\leq 23.6 - 29.8$ depending on Rosgen Stream type. (Table 5-8. p. 78)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 33% reduction in total load. (Table 7-9 p.207)	WLA = 0 LA = 51% reduction in loading from human-caused bank erosion. (Table 7-9 p.207) PLUS An adaptive management plan for assessing future sources. (p 279)	"
California Creek MT41C002_090	Siltation ¹ , Turbidity ¹	Riffle % surface fines $< 6 \text{ mm} \leq 20$ to 38% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 6$ or 8% depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.2 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating $\leq 23.4 - 29.8$ depending on Rosgen Stream type. (Table 5-10. p. 81)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 20% reduction in total load. (Table 7-10 p.208)	WLA = 0 LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing, 25% reduction from historic mining activities, 50% reduction from past riparian vegetation clearing for agricultural fields. (Table 7-10 p.208) PLUS An adaptive management plan for assessing future sources. (p 279)	"

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
Coal Creek, MT41C003_020	Thermal Modification ²	New listing during TMDL project. Not addressed in this document.	NA	NA	“
	No previous pollutant listings, only pollution listings Sediment TMDL completed ³	Riffle % surface fines < 6 mm ≤ 20 to 38% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 6 or 8% depending on Rosgen stream channel type. W/D ratio ≤ 9 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 - 29.8 depending on Rosgen Stream type. (Table 5-12. p. 83)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 8% reduction in total load. (Table 7-11 p209)	WLA = 0 LA = 51% reduction in loading from grazing. (Table 7-11 p209) PLUS An adaptive management plan for assessing future sources. (p 279)	“
Cottonwood Creek MT41C003_030	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 38 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 9 depending on Rosgen stream channel type. Entrenchment ratio ≥ 2.5 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 - 23.6 depending on Rosgen Stream type. (Table 5-14. p. 86)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 21% reduction in total load. (Table 7-12 p210)	WLA = 0 LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing, 25% reduction from historic channel straightening. (Table 7-12 p210) PLUS An adaptive management plan for assessing future sources.	“
Currant Creek MT41C002_060	Siltation ¹	Riffle % surface fines < 6 mm ≤ 24%. W/D ratio ≤ 9.2 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.2. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 24.5. (Table 5-16 p. 89)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 21% reduction in total load. (Table 7-13 p211)	WLA = 0 LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing. (Table 7-13 p211) PLUS An adaptive management plan for assessing future sources. (p 279)	“

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
	Metals (No prior listing)	Adaptive management monitoring plan provided. Likely impaired for lead. Sources assessed under Ramshorn Creek TMDL allocation. Will be listed on 2006 list.			"
East Fork Ruby River MT41C003_040	No previous pollutant listings, only pollution listings Sediment TMDL completed ³	Riffle % surface fines < 6 mm ≤ 20 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7 to 8% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 2.9 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.6 -29.8 depending on Rosgen Stream type. (Table 5-19. p. 93)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 11% reduction in total load. (Table 7-14 p212)	WLA = 0 LA = 51% reduction in loading from grazing. (Table 7-14 p212) PLUS An adaptive management plan for assessing future sources.	"
Garden Creek MT41C002_100	Siltation ¹	Riffle % surface fines < 6 mm ≤ 20 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7 to 8% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.2 to 2.5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.6 -29.8 depending on Rosgen Stream type. (Table 5-21. p. 95)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 21% reduction in total load. (Table 7-15 p213)	WLA = 0 LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing. (Table 7-15 p213) PLUS An adaptive management plan for assessing future sources. (p 279)	"
Harris Creek MT41C002_120	Siltation ¹	Justification for no need of a siltation TMDL. Narrative criteria for siltation and nutrients are currently met.			"
Hawkeye Creek MT41C003_140	Siltation ¹ (and habitat alterations)	Justification for no need of a siltation TMDL. Human caused sediment loading is estimated at <1% of the total sediment load. Sediment conditions are due to a natural highly erosive setting.			"
Indian Creek MT41C002_030	No previous pollutant listings, only	Riffle % surface fines < 6 mm ≤ 10 to 24% depending on Rosgen stream channel type. Pool tail out %	Sum of the allocations to the known human-caused sediment sources	WLA = 12 tons/year. If TSS load doubles, a TSS reduction	"

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
	pollution listings Sediment TMDL completed ³	surface fines < 2 mm ≤ 8%. W/D ratio ≤ 9.2 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.2 to 1.6 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index > 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 24.5 -29.8 depending on Rosgen Stream type. (Table 5-26, p. 102)	+ natural sources. This equates to a 36% reduction in total load. (Table 7-16 p214)	feasibility study or pollutant trading system feasibility study will be initiated via MPDES process. LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing, 25% reduction from historic channel manipulation, 25% reduction from past riparian vegetation clearing, 50% reduction from irrigation diversion impacts. (Table 7.16 p214) PLUS An adaptive management plan for assessing future sources. (p 279)	
Middle Fork Ruby River, MT41C003_090	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 38%. W/D ratio ≤ 9.1. Entrenchment ratio > 5t. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4. (Table 5-28, p. 105)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 5% reduction in total load. (Table 7-17 p215)	WLA = 0 LA = 60% reduction in loading from roads and a 51% reduction in loading from grazing. (Table 7-17 p215) PLUS An adaptive management plan for assessing future sources. (p 279)	“
Mill Creek, MT41C002_020	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 10 to 38% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 8%. W/D ratio ≤ 9.2 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index > 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 -29.8 depending on Rosgen Stream type. (Table 5-34, p. 112)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 26% reduction in total load. (Table 7-18, p217)	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing, 50% reduction from recreation, 50% reduction from past riparian vegetation clearing (urban and agriculture), 85% reduction from nonpoint source stormwater. (Table 7-18, p217) PLUS An adaptive management plan for assessing future sources. (p 279)	“
	Thermal Modification ¹	Adherence to state standard (a 1°F maximum increase above	Sum of the allocations	WLA = 0 LA=	

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
		naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the maximum allowable increase in water temperature is 0.5°F.) OR 1. All irrigation return flows can not increase stream temperature more than 0.25 °F cumulatively. and; 2. Transport warm irrigation water using other means than natural stream channels, and; 3. Canopy cover comparable to reference conditions. (55% for headwaters; 71% for pediment; 35% for alluvial valley).	to the known human-caused thermal sources.	1. Instream Flow (Surrogates) for irrigated agriculture: A. Reduce warm irrigation water entering the Mill Creek and its tributaries by 65%. 2. Canopy Density (Surrogate): Increase average stream bank canopy density by 7.6% in pediment/foothills area (riparian grazing, urban activities and crop encroachment) and 22.9% in the Ruby alluvial valley (riparian grazing and crop encroachment). PLUS A performance-based allocation to future sources. (p 279)	
	Metals (Lead and Zinc on 2004 list) ²	No metals TMDL needed for main stem. Prior listing error based on spatiality of data. Monitoring plan provided for Middle fork of Mill Creek and Buckeye Mine area.			
Mill Gulch MT41C002_070	Siltation ¹	Justification for no need of a siltation TMDL. Narrative criteria for siltation and nutrients are currently met.			“
Mormon Creek MT41C002_110	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 38 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 9.1 depending on Rosgen stream channel type. Entrenchment ratio ≥ 2.5 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 16% reduction in total load. (Table 7-19 p217)	WLA = 0 LA = a 51% reduction in loading from grazing. (Table 7-19 p217) PLUS An adaptive management plan for assessing future sources. (p 279)	“

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
		85%.BEHI bank stability rating \leq 23.4 -23.6 depending on Rosgen Stream type. (Table 5-37. p. 116)			
North Fork Greenhorn Creek MT41C003_070	Habitat alterations	Non-pollutant Impairment. No TMDL required. Justification for fully supporting all uses provided.			"
Poison Creek MT41C003_110	Siltation ¹ (and habitat alterations)	Riffle % surface fines $< 6 \text{ mm} \leq 20\%$. Pool tail out % surface fines $< 2 \text{ mm} \leq 8\%$. W/D ratio ≤ 15.8 . Entrenchment ratio ≥ 1.6 . Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$.BEHI bank stability rating ≤ 29.8 . (Table 5-40. p. 120)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 22% reduction in total load. (Table 7-20 p218)	WLA = 0 LA = a 51% reduction in loading from grazing. (Table 7-20 p218) PLUS An adaptive management plan for assessing future sources. (p 279)	"
Ramshorn Creek MT41C002_050	Siltation ² (and habitat alterations)	Riffle % surface fines $< 6 \text{ mm} \leq 20$ to 44% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 8\%$. W/D ratio ≤ 8.3 to 15.8 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$.BEHI bank stability rating ≤ 23.6 -29.8 depending on Rosgen Stream type. (Table 5-45. p. 125)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 43% reduction in total load. (Table 7-21 p220)	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing, 50% reduction from historic channel manipulation (straightening, steepening), 25% reduction from placer mining, 50% reduction from irrigation diversion impacts. (Table 7-21 p220) PLUS An adaptive management plan for assessing future sources. (p 279)	"
	Metals (Lead) ¹	Lead chronic aquatic life standard. Sediment criteria. Aquatic Life toxic response. (Section 4.1.1 p 38)	TMDL is based on average daily stream flow and Montana's lead standard. The TMDL is contained in equations 3-1 and 9-1. TMDL application is provided in Table 9-2.	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing (from sediment TMDL). The remainder of the load from abandoned mines and natural background will be less than the TMDL (Figure 9-1, p245) PLUS	"

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
				An adaptive management plan for refining source assessment from abandoned mines and for future sources. (p 279)	
Ruby Reservoir MT41C004_010	Sediment ¹	Justification for no need of a siltation TMDL. Narrative criteria for siltation and nutrients are currently met			“
Ruby River below reservoir MT41C001_010 (including Clear Creek, a side channel)	Siltation ¹ Suspended Solids (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 29 to 38% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 6% depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 3.2 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 -29 depending on Rosgen Stream type. (Table 5-47. p. 128)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 19% reduction in total load. Allocations for listed tributaries to the Lower Ruby River are presented in separate water body-specific discussions. (Table 7-22 p221)	WLA = See Indian Creek Sediment TMDL for WLA. LA = 51% reduction in loading from grazing, 25% reduction from historic channel manipulation (straightening, steepening), 50% reduction from past riparian vegetation removal, 25% reduction from channel adjustment from bank armoring and flow manipulation, 80% reduction from cultivation along stream banks, 50% reduction from recreational use. (Table 7-22 p221) PLUS An adaptive management plan for assessing future sources. (p 279)	“
	Thermal modification ²	Adherence to state standard (a 1°F maximum increase above naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the maximum allowable increase in water temperature is 0.5°F.) <u>OR</u> 1. All irrigation return flows can not increase stream temperature more than 0.25 °F	Sum of the allocations to the known human-caused heating sources.	WLA = 0.7 cfs at 88 °F (2219248 kcal/hr above 32 °F) LA= 1. Instream Flow (Surrogates) for irrigated agriculture: A. Reduce warm irrigation water entering the lower Ruby River and tributaries by 65%. 2. Canopy Density (Surrogate): Increase average stream bank canopy density by 130%. 3. Increase average daily summer time instream flow conditions by 37% (Table 6-4, p176) PLUS A performance-based allocation to	“

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
		<p>cumulatively, and;</p> <p>2. Apply irrigation water savings from irrigation efficiency projects to instream use during warmest months to achieve better buffering capacity (Apr.-Oct). Estimated water savings by reach are provided in Appendix C.</p> <p>3. Canopy cover comparable to reference conditions. (33% canopy cover over the stream).</p> <p>(Table 5-50, p133)</p>		future sources. (p 279)	
	Metals ¹	Justification for no need of metals TMDLs. Listings based on 1970s data of suspect quality. More recent data indicates no impairment.			“
Ruby River above reservoir MT41C001_020	Siltation ¹ Suspended Solids (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 29 to 38% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 6% depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 3.2 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index ≥ 75. % stable bank ≥ 85%. BEHI bank stability rating ≤ 23.4 -29 depending on Rosgen Stream type. (Table 5-53. p. 138)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 15% reduction in total load. Allocations for listed tributaries to the Upper Ruby River are presented in separate water body-specific discussions. (Table 7-24 p224)	<p>WLA = 0</p> <p>LA = 60% reduction in loading from roads, and a 51% reduction in loading from grazing. (Table 7-24 p224)</p> <p>PLUS</p> <p>An adaptive management plan for assessing future sources. (p 279)</p>	“
	Metals ¹	Justification for no need of metals TMDLs. Listings based on 1970s data of suspect quality. More recent data indicates no impairment.			“
Shovel Creek MT41C003_150	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 38 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 9.1 depending on Rosgen stream	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 16% reduction in total load. (Table 7-25 p225)	<p>WLA = 0</p> <p>LA = a 51% reduction in loading from grazing. (Table 7-25 p225)</p> <p>PLUS</p>	“

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
		channel type. Entrenchment ratio ≥ 2.5 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating $\leq 23.4 - 23.6$ depending on Rosgen Stream type. (Table 5-55 p. 142)		An adaptive management plan for assessing future sources.	
Sweetwater Creek MT41C003_060	Siltation ¹ (and habitat alterations)	Riffle % surface fines $< 6 \text{ mm} \leq 29$ to 38% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 6\%$ depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 3.2 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating $\leq 23.4 - 29$ depending on Rosgen Stream type. (Table 5-57, 5-58. p. 145)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 41% reduction in total load. (Table 7-25 p225)	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing, a 50% reduction in loading from channel manipulation, and a 50% reduction in loading from irrigation diversions. (Table 7-25 p225) PLUS An adaptive management plan for assessing future sources. (p 279)	"
	Nutrients ²	TP $< 20 \text{ ug/L}$ TN $< 300 \text{ ug/L}$ NO ₂ +NO ₃ $< 20 \text{ ug/L}$ Benthic Chl. a Yearly Avg 50/ Max. 150 mg/m2	TN and TP TMDLs are based on average daily stream flow and WQ targets. TMDL is provided in Equation 8-1 and Figure 8-1. (p. 233)	Agricultural (grazing + irrigated pasture) and natural sources combined will be less than the TN and TP TMDLs.	"
Warm Springs Creek MT41C003_050	Siltation ¹	Riffle % surface fines $< 6 \text{ mm} \leq 20$ to 38% depending on Rosgen stream channel type. Pool tail out % surface fines $< 2 \text{ mm} \leq 6-8\%$ depending on Rosgen stream channel type. W/D ratio ≤ 9.1 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14 . MVFP index ≥ 75 . % stable bank $\geq 85\%$. BEHI bank stability rating \leq	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 9% reduction in total load. (Table 7-26 p226)	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing, past vegetation clearing and channel manipulation. (Table 7-26 p226) PLUS An adaptive management plan for assessing future sources. (p 279)	"

Waterbody Name*	TMDL Parameter/ Pollutant	Water Quality Goal/Endpoint	TMDL	WLA LA	Supporting Documentation (not an exhaustive list of supporting documents)
		23.4 -29.8 depending on Rosgen Stream type. (Table 5-61 p. 150)			
West Fork Ruby River MT41C003_080	Siltation ¹ Suspended Solids (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 38 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 7% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 9.1 depending on Rosgen stream channel type. Entrenchment ratio ≥ 2.5 to 5 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index > 75. % stable bank ≥ 85%.BEHI bank stability rating ≤ 23.4 -23.6 depending on Rosgen Stream type. (Table 5-63 p. 153)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 6% reduction in total load. (Table 7-28 p228)	WLA = 0 LA = a 51% reduction in loading from grazing. (Table 7-28 p228) PLUS An adaptive management plan for assessing future sources.	“
Wisconsin Creek, MT41C002_010 MT41C003_050	Siltation ¹ (and habitat alterations)	Riffle % surface fines < 6 mm ≤ 14 to 44% depending on Rosgen stream channel type. Pool tail out % surface fines < 2 mm ≤ 6 to 8% depending on Rosgen stream channel type. W/D ratio ≤ 8.3 to 25.6 depending on Rosgen stream channel type. Entrenchment ratio ≥ 1.6 to 3.2 depending on Rosgen stream channel type. Clinger Richness ≥ 14. MVFP index > 75. % stable bank ≥ 85%.BEHI bank stability rating ≤ 23.6 -29 depending on Rosgen Stream type. (Table 5-66 p. 156)	Sum of the allocations to the known human-caused sediment sources + natural sources. This equates to a 31% reduction in total load. (Table 7-27 p227)	WLA = 0 LA = 60% reduction in loading from roads, a 51% reduction in loading from grazing. (Table 7-27 p227) PLUS An adaptive management plan for assessing future sources. (p 279)	“
	Metals ² (Arsenic, Lead)	Potentially impaired. No TMDL will be written at this time because metal concentrations in water are below standards but sediment metals and biological toxic responses are near thresholds in one monitoring location. A monitoring plan is provided to better understand the environmental impacts from metals. (p. 154)			“

¹Originally listed on Montana's 1996 Section 303(d) List.

²On Montana's most recent and approved 303(d) List (i.e., 2004).

³TMDLs determined to be necessary and/or appropriate during the TMDL process. The pollutants that have been addressed were not previously listed.

EPA REGION VIII MONTANA OFFICE TMDL REVIEW FORM

Document Name:	Ruby River Watershed Total Maximum Daily Loads and Framework for a Water Quality Restoration Plan
Submitted by:	MTDEQ
Date Received:	November 30, 2005
Review Date:	December 18, 2006
Reviewer:	Ron Steg
Formal or Informal Review?	FORMAL

This document provides a standard format for the EPA Montana Office to provide comments to the Montana Department of Environmental Quality on TMDL documents provided to the EPA for either official formal, or informal review. All TMDL documents are measured against the following 12 review criteria:

1. Water Quality Impairment Status
2. Water Quality Standards
3. Water Quality Targets
4. Significant Sources
5. Total Maximum Daily Load
6. Allocation
7. Margin of Safety and Seasonality
8. Monitoring Strategy
9. Restoration Strategy
10. Public Participation
11. Endangered Species Act Compliance
12. Technical Analysis

Each of the 12 review criteria are described below to provide the rational for the review, followed by EPA's summary and comments/questions. **Comments/questions that need to be addressed are presented in bold.** This review is intended to ensure compliance with the Clean Water Act and also to ensure that the reviewed documents are technically sound and the conclusions are technically defensible.

1. Water Quality Impairment Status

Criterion Description – Water Quality Impairment Status

TMDL documents must include a description of the listed water quality impairments. While the 303(d) list identifies probable causes and sources of water quality impairments, the information contained in the 303(d) list is generally not sufficiently detailed to provide the reader with an adequate understanding of the impairments. TMDL documents should include a thorough description/summary of all available water quality data such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and/or appropriate water quality standards.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The first step in the Ruby TPA TMDL process involved a comprehensive review of water quality impairment status focusing on the 1996 and most recently approved (2004) 303(d) lists. Of 25 1996-listed water body/pollutant combinations, 19 were verified as still impaired and TMDLs have been prepared. The remaining six were found to be meeting water quality standards and no TMDLs were necessary. All water body/pollutant combinations originally listed in 1996 have been addressed. Of 12 2004-listed water body/pollutant combinations, five were verified as still impaired and TMDLs have been prepared. Six of the remaining 7 were not addressed at this time and one was found to be meeting water quality standards. Additionally, this document identified three impairments that had never appeared on previous 303(d) lists and prepared TMDLs for them. A summary is presented below and in Enclosure 1.

TMDLs for 1996 WB/PC ¹	"Delisted" 1996 WB/PC	1996 WB/PC Not addressed	TMDLs for 2004 WB/PC	"Delisted" 2004 WB/PC	TMDLs for non-listed WB/PC	2004 WB/PC Not addressed
19	6	0	5	1	3	6

¹WB/PC = water body/pollutant combinations

2. Water Quality Standards

Criterion Description – Water Quality Standards

The TMDL document must include a description of all applicable water quality standards for all affected jurisdictions. TMDLs result in maintaining and attaining water quality standards. Water quality standards are the basis from which TMDL's are established and the TMDL targets are derived, including the numeric, narrative, use classification, and antidegradation components of the standards.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The applicable water quality standards are adequately summarized in Section 3.3.

3. Water Quality Targets

Criterion Description – Water Quality Targets

Quantified targets or endpoints must be provided to address each listed pollutant/water body combination. Target values must represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the TMDL target. For pollutants with narrative standards, the narrative standard must be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions, and a measure of biota).

- ☐ Satisfies Criterion
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- ☒ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The targets are summarized in Enclosure 1. The targets appear to adequately represent the applicable narrative and numeric water quality standards. It should be noted, however, that the suite of sediment targets includes biological indicators (i.e., clinger richness, and MVFP) that has been determined to be unreliable. In the future, these biological indicators should not be used. When conducting your 5-year review of these TMDLs consider other biological indicators such as the MMI and O/E metrics that have been recently developed by your Department.

4. Significant Sources

Criterion Description – Significant Sources

TMDLs must consider all significant sources of the stressor of concern. All sources or causes of the stressor must be identified or accounted for in some manner. The detail provided in the source assessment step drives the rigor of the allocation step. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source when the relative load contribution from each source has been estimated. Ideally, therefore, the pollutant load from each significant source should be quantified. This can be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

A unique source assessment approach was followed for each of the pollutants considered in this analysis as described below:

Temperature

Potential sources of increased temperature include riparian degradation, channel geometry, irrigation diversion/return, and warming in ponds. Forward looking infrared (FLIR) imagery was collected for the lower Ruby River and some of the tributaries to assist in the location of warming or cooling areas and the Stream Network Temperature Model (SNTMP) was used to model thermal loading. The source assessment for temperature was comprehensive and fully adequate for the purpose of TMDL development.

Sediment

Sediment source assessments included:

- USLE modeling and Automated Geospatial Watershed Assessment (AGWA) modeling.
- Estimating sediment yield from road-related sources
- Estimating sediment yield from near-stream sources
- Estimating point source loading from discharge data.

Although the source assessment approach for sediment was fairly simplistic and has substantial associated errors, given the scale of the watershed, it was adequate for the purpose of allocating to the most significant sources.

Nutrients

The primary nutrient sources identified are nonpoint source and include agricultural-related sources and roads. Since nutrients are often transported by sediment, the nutrient source assessment relied heavily on the above described sediment source assessment combined with aerial assessment and use of available water quality data. The nutrient source assessment is adequate.

Metals

In general, metals source assessment focused on readily available GIS data (e.g., to pinpoint locations of abandoned mines, etc.) metals water chemistry data, and air photo assessment. The metals source assessment is adequate.

5. TMDL

Criterion Description – Total Maximum Daily Load

TMDLs include a quantified pollutant reduction target. According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs can be expressed as mass per unit of time, toxicity, % load reduction, or other measure. TMDLs must address, either singly or in combination, each listed pollutant/water body combination.

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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The TMDLs are summarized in Enclosure 1 and all appear to be adequate. Metals TMDLs are expressed as a percent reduction and in pounds per day. Since sediment loading is episodic, almost exclusively from nonpoint sources, and not accurately predictable on a daily basis, the sediment TMDLs have been expressed as percent load reductions. The temperature TMDLs are based on surrogates such as flow and shade. Daily loading is not applicable to these surrogates. Further, it was not felt that estimating the loading capacity for heat would add any value in guiding the management activities needed to solve the identified temperature problems. The nutrient TMDLs are expressed as percent reductions and in pounds per day.

6. Allocation

Criterion Description – Allocation

TMDLs apportion responsibility for taking actions or allocate the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing of responsibility. A performance based allocation approach, where a detailed strategy is articulated for the application of BMPs, may also be appropriate for non point sources.

In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).

Allocating load reductions to specific sources is generally the most contentious and politically sensitive component of the TMDL process. It is also the step in the process where management direction is provided to actually achieve the desired load reductions. In many ways, it is a prioritization of restoration activities that need to occur to restore water quality. For these reasons, every effort should be made to be as detailed as possible and also, to base all conclusions on the best available scientific principles.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The allocations are summarized in Enclosure 1 and appear to be adequate.

7. Margin of Safety and Seasonality

Criterion Description – Margin of Safety/Seasonality

A margin of safety (MOS) is a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body (303(d)(1)(c)). The MOS can be implicitly expressed by incorporating a margin of safety into conservative assumptions used to develop the TMDL. In other cases, the MOS can be built in as a separate component of the TMDL (in this case, quantitatively, a $TMDL = WLA + LA + MOS$). In all cases, specific documentation describing the rationale for the MOS is required.

Seasonal considerations, such as critical flow periods (high flow, low flow), also need to be considered when establishing TMDLs, targets, and allocations.

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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Unique margins of safety have been employed for each of the pollutants addressed in this document. Temperature, sediment, nutrient, and metals margins of safety are presented in Sections 6.2.3, 7.3.1, 8.3.4, and 9.4.4, respectively and all appear to be adequate.

8. Monitoring Strategy

Criterion Description – Monitoring Strategy

Many TMDL's are likely to have significant uncertainty associated with selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL documents to articulate the means by which the TMDL will be evaluated in the field, and to provide supplemental data in the future to address any uncertainties that may exist when the document is prepared.

At a minimum, the monitoring strategy should:

- *Articulate the monitoring hypothesis and explain how the monitoring plan will test it.*
- *Address the relationships between the monitoring plan and the various components of the TMDL (targets, sources, allocations, etc.).*
- *Explain any assumptions used.*
- *Describe monitoring methods.*
- *Define monitoring locations and frequencies, and list the responsible parties.*

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

A monitoring strategy is presented in Section 11 to facilitate adaptive management, assess water quality issues on water bodies not currently listed that may be impaired, and determine the effectiveness of restoration activities once they are implemented. The monitoring strategy appears to be adequate.

9. Restoration Strategy

Criterion Description – Restoration Strategy

At a minimum, sufficient information should be provided in the TMDL document to demonstrate that if the TMDL were implemented, water quality standards would be attained or maintained. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document.

- ☐ Satisfies Criterion
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☒ Not a required element in this case. Comments or questions provided for informational purposes.

A water quality restoration strategy has been prepared that prioritizes implementation measures to attain and maintain water quality standards.

10. Public Participation

Criterion Description – Public Participation

The fundamental requirement for public participation is that all stakeholders have an opportunity to be part of the process. Public participation should fit the needs of the particular TMDL.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Public involvement activities are described in Section 12.0 and appear to be adequate.

11. Technical Analysis

Criterion Description – Technical Analysis

TMDLs must be supported by an appropriate level of technical analysis. It applies to all of the components of a TMDL document. It is vitally important that the technical basis for all conclusions be articulated in a manner that is easily understandable and readily apparent to the reader. Of particular importance, the cause and effect relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and allocations needs to be supported by an appropriate level of technical analysis.

- ☒ Satisfies Criterion
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

The level of technical analysis appears to be very thorough and adequate for the situation.

12. Endangered Species Act Compliance

Criterion Description – Endangered Species Act Compliance

EPA's approval of a TMDL may constitute an action subject to the provisions of Section 7 of the Endangered Species Act ("ESA"). EPA will consult, as appropriate, with the US Fish and Wildlife Service (USFWS) to determine if there is an effect on listed endangered and threatened species pertaining to EPA's approval of the TMDL. The responsibility to consult with the USFWS lies with EPA and is not a requirement under the Clean Water Act for approving TMDLs. States are encouraged, however, to participate with FWS and EPA in the consultation process and, most importantly, to document in its TMDLs the potential effects (adverse or beneficial) the TMDL may have on listed as well as candidate and proposed species under the ESA.

- ☐ Satisfies Criterion
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☒ Not a required element in this case. Comments or questions provided for informational purposes.

EPA will address ESA issues.